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BRIEF COMMUNICATION

SEASONAL ACTIVITY OF THE EARTHWORM, *GEMASCOLEX LATERALIS* (MEGASCOLECIDAE), IN A *EUCALYPTUS* WOODLAND IN SOUTH AUSTRALIA

The earthworm fauna of agricultural habitats, especially pastures, has been extensively surveyed in south-eastern Australia in recent years[1-4]. The fauna is dominated by accidentally introduced species, particularly Lumbricidae from Europe (e.g., *Aporrectodea caliginosa, A. trapezoides* and *A. rosea*). Native species are rare. Very little is known of the biologies of native earthworms, either in urban, agricultural or native habitats[5-11]. This brief communication reports on the seasonal activity of *Gemascolex lateralis* (Spencer 1892) (Megascolecidae), one of the most common native species in South Australia, and offers one possible explanation for its rarity in pastures.

Engelbrook National Trust Reserve is an open forest (*Eucalyptus obliqua - E. baxteri*) at Bridgewater in the Mount Lofty Ranges, SA (350 m altitude. Grid reference 962224 on Sheet 6627-1, Echunga, 1 : 50000). The understorey of the reserve is composed of shrubs such as *Banksia, Acacia, Hakea, Leptospermum* and *Hibbertia* spp. The soil is a yellow podzolic. Average annual rainfall is 1050 mm. Much of Engelbrook Reserve has been burnt by bushfires in recent years but the sites reported here had not been burnt for at least 35 years at the time of the study.

Baker[12,13] set eighty pitfall traps (plastic jars, 9 cm diam., 9 cm deep) flush with the soil surface within Engelbrook Reserve in March 1983. Forty traps were set on a north-west slope and the other forty on a south-west slope. The traps were set 10 m apart in two transects on each slope. Each trap was covered by a ceramic tile (15 x 15 cm), set approximately 2 cm above the traps on three nails. These tiles prevented rain and leaf litter from fouling the traps. No preservative was added to the traps. The traps were inspected weekly until March 1984 and the invertebrates

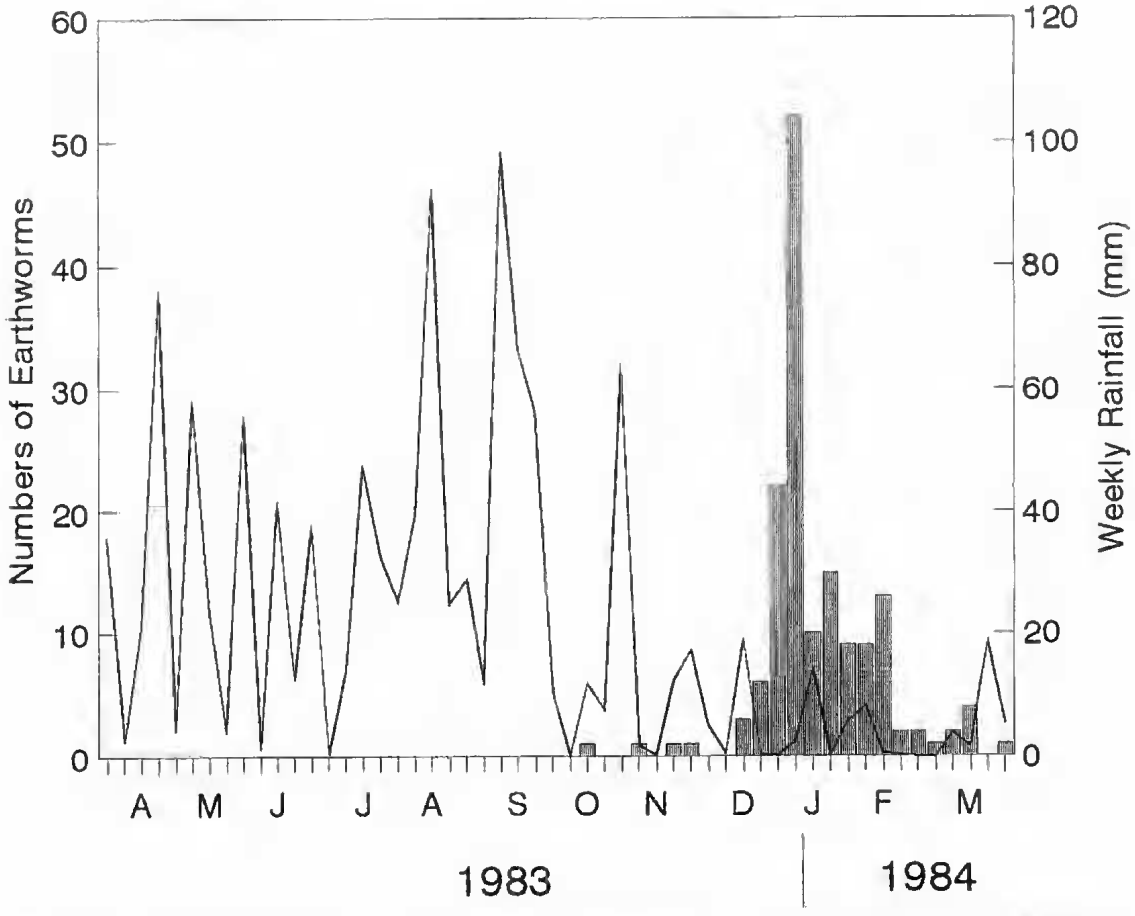

Fig. 1. Numbers of *Gemascolex lateralis* trapped per week in Engelbrook Reserve, SA during 1983-84 (bars). Weekly rainfalls, recorded nearby at Stirling Post Office, are included (line).

that were caught were preserved for later counting.

One species of earthworm, *G. lateralis*, was trapped, mostly in the summer months (Fig. 1). There was no discernible difference between the catches on the two slopes ($t = 1.42$, $p > 0.05$ for a paired t test comparing total weekly catches for the two slopes). The data for the two groups of traps have therefore been combined in Fig. 1. There was no apparent relationship between the peak in trapped earthworms in December and prevailing weather (e.g., rainfall) at that time ($r = -0.239$, $p > 0.05$ for weekly data for 9 November 1983 to 21 March 1984).

The activities of earthworms, on and near the soil surface, are usually associated with cool, wet weather in temperate and mediterranean habitats[4,15]. In particular, Abbott[7] reported that the activity of native earthworms in a jarrah forest in south-western WA was restricted to winter and spring when soil moisture was highest. It is therefore surprising that the surface activity of *G. lateralis* peaked in summer at Engelbrook Reserve when weather was at its hottest and driest. However, Lawson[10] found *G. lateralis* throughout the year in the surface layers of the soil (0-5 cm deep) in a *Eucalyptus* woodland near Cape Jervis, SA. She argued that, because of the predominance of chiellate adults at this time, *G. lateralis* reproduced during the hotter, warmer months of the year in this woodland. She did not find cocoons (at any time) to verify this conclusion. In addition, Lawson could not find *G. lateralis* in a nearby pasture. Baker *et al.*[9] did find small numbers of *G. lateralis* in other pastures in the Mount Lofty Ranges. In these pastures, *G. lateralis* was present in the top 10 cm of soil from autumn to spring but retreated to greater depths in the summer months. Most worms were found in a patch within one pasture near a clump of *Eucalyptus* trees and fallen logs.

Why *G. lateralis* is present, indeed most active, on the soil surface in native woodlands during summer is not at all clear. Apparently, the shelter provided by the above-ground vegetation in woodlands provides sufficient moisture and cool temperatures to enable such behaviour. But in open pastures, it seems likely that the lack of similar vegetation would prevent this summer surface activity and hence reduce the abundance of *G. lateralis*. If it is to survive in pastures at all through summer, *G. lateralis* must retreat from surface layers to greater depths where conditions are cooler and moister, as do the more abundant, introduced lumbricids [12,16].

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